ASTP (U5A) MC489/1
Time: 06:27CDT, 143:06 GET
7/21/75

PAO - 143 hours, 6 minutes ground elapsed time. Nearing acquisition, through the ATS satellite. Oncoming Flight Director, Pete Frank, moments ago presented a plaque to the Soviet Support Room specialists, here in Mission Control making them honorary members of the Mission Control team. The plaque contains the sigma symbol and a small reproduction of the American and Soviet flags. Apollo crew members this morning performing housekeeping functions before breakfast. They're scheduled for more Earth observations experiments today, along with more astrophysical experiments. Later on, this afternoon, they'll be working on some medical measurements for surgeons here on the ground. We'll keep the line up now for acquisition momentarily through the ATS.

CC-H Apollo, Houston, through Santiago and then ATS, over.

CMP Loud and clear, Bo. Good morning.

CC-H Good morning, Vance. I still have some more flight plan updates for you. If you could get out the flight plan supplement and - if anybody's there I can continue with some on the flight plan.

CMP Okay, stand by 1.

ACDR Houston, Apollo.

CC-H Apollo, Houston. Go ahead.

ACDR Okay. We got the waste water dump going. We're timing it.

CC-H Roger.

ACDR And, Bo, does it look like we could use that evaporator to boil water today? Over.

END OF TAPE

ASTP (USA) MC490/1
Time: 06:38 CDT, 143:16 GET
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ACDR And Bo, does it look like we could use that evaporator to boil water today? Over.
CC-H Well, we're going to want to keep the evaporator shut down until the evaporator activation at 149, and that was one of the flight plan changes that I was going to give you.
ACDR Okay.
CC-H And how is the vehicle, is it comfortable?
ACDR It's a little warm in the command module.
CC-H Understand.
ACDR We do have the VTR off as per the flight plan, now.
CC-H Roger.
CMP Okay. Ready to copy your changes now, Bo.
CC-H Okay. Do you have the flight plan supplement out Vance?
CMP That's correct.
CC-H Okay. E - rev 88 EUV pad.
CMP (Garble)
CC-H That's on page 6-15.
CMP Okay. Got the rev 88 EUV pad.
CC-H Okay. The time on it is 145:25:23.
CMP Roger. 145:25:23.
CC-H And I'd like you to add a - a step at a DET of 46, X-ray high voltage power off.
CMP Roger. At 46 minutes, which would be at the end of the pad X-ray high voltage power off.
CC-H Negative. That would be 46 that would be between 44 and 58 in a count up sequence.
CC-H Do you have that Vance? I'm sorry it says set DET 37:44 and then I'd like you to stick 146 in between 44 and 58.
CMP Okay. I just glanced at it and saw there were 2 places where you could put that and I chose the end of the pad. Sorry. Okay. Stand by.
CMP Okay. Go ahead.
CC-H Okay. At 58, delete the X-ray and do the EUV as scheduled.
CMP Roger. Delete X-ray, do EUV.
CC-H Down about 3 quarters of the way at 25:43 delete the X-ray power down.
CMP Roger.
CC-H On EUV pad 89 the time will be 146:54:13.
CMP Okay. That's EUV pad rev 89, 146:54:13.
CC-H Roger. And that's all I have in the flight plan supplement now go back to the flight plan.
CMP Okay.
CMP Bo, I'd like to verify that water dump's 9 minutes.
CC-H Roger. Water dump is 9 minutes.
CMP Okay. Proceding along.

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Time: 06:38 CDT, 143:16 GET
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CMP Bo, how do you read?
CC-H Go ahead. I read you fine.
CMP Did you have some more of the flight plan? I can copy.
CC-H Roger. I do. This would be at rev 88 - rev 87 88, page 4-3.27.
CMP Okay.
CC-H I already told Tom the high gain in the middle of the page is pitch minus 4 and yaw 312 at 144:45 X-ray contingency prep, page 1-25.
CMP We have tha.
CC-H At 45:10, scratch out deactivate primary evaporator and add BMAG number 1 warmup.
CMP At 145:10 scratch deactivate the primary evap, add BMAG 1 warmup.
CC-H Roger. And if you'll turn the page now.
CMP Go ahead.
CC-H About a third of the way down, right after the EUV scratch out, activate primary evaporator.
CMP Got it.
CC-H And add BMAG number 1 on and that should be at 146:02 and this is the start of the ATM.
CC-H That's prior to the VERB 49 maneuver - BMAG number 1 on.
CMP Okay. At 146:05 scratch out activate primary evap and at - in 146:02 add BMAG 1 on.
CC-H Roger. And then now we'll be working on this ATM and that VERB 48 should be - change it to 60102, 01111.
CMP Okay. This is up at 146 about and it's VERB 48 maneuver 60 - the DAP is 60102 and 0 and four 1's
CMP Roger. And there's - there's all - there's alreay one in the flight plan at about 146 - -

END OF TAPE

CMP - 6-0 - the DAP is 6-0-1-0-2 and 0 and four 1's.
CC-H Roger. And there - there's already one in the flight plan, at about 146 03.
CMP Yeah. We have it.
CC-H Okay. And now that VERB 49 maneuver, that says VERB 49 maneuver to target 3 - 65 A attitude, is going to be moved down to 146 UP 37. That's after the ATM burn. And it will be the VERB 49 maneuver to target 365 A - 178, 10, 037.60, and all zeros.
CMP Okay. So that VERB 49 maneuver is okay as is - except we change the time of doing it, which goes down to 146:37 - was that?
CC-H Roger. Right after the burn.
CMP Roger. Got it.
CC-H Okay. And instead of that maneuver, there will be a maneuver to the ATM burn pad attitude.
CMP Okay.
CC-H At 146:17, there are high-gain angles. ANd change them to pitch minus 22, yaw 305.
CMP Minus 22 and 305. And where does - and that puts that maneuver to the burn attitude, then, at - right after you turn on BMAG 1.
CC-H Roger. That takes the place of that VERB 49 maneuver to the target 365 attitude.
CC-H And at 146:36, perform the burn.
CMP 146:36 - perform burn.
CC-H Roger. And I already gave you the 146:37, which is the maneuver to the target 365 A attitude.
CMP Roger.
CC-H At 14:40, VERB 48, 6-1-1-0-1, 0-1-1-1-1.
CMP Okay. After the burn, go back to a slow DAP maneuver rate, which is 6-1-1-0-1. And the same, 0-1-1-1-1.
CC-H Okay. And then inhibit all jets except Dog 1, Dog 2, Alpha 3, Charlie 4, Baker 3, and Dog 4.
CC-H And you'll notice there that we're using the Dog 2 instead of the Bravo 2. And that's to conserve quad B propellant.
CMP Okay, after that -
CC-H Say that again?
CMP After that, inhibit all jets - To read back after that, inhibit all jets except D 1, D - or, Delta 1, Delta 2, Alpha 3, Charlie 4, Bravo 3, Delta 4.
CC-H Roger. And then go to the flight plan supplement rev 89.
CMP Okay.
CC-H And we think that the waste water dump should - is about finished now.
CMP Okay.

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CC-H And at 146:26, there had been that VERB 48 - and that's to be deleted.
CMP Stand by one.
CC-H Go ahead. Standing by.
CMP Okay, Bo. Why don't we hold off on these supplement flight plan additional changes til Deke gets his morning report worked up? He's got that right now. And did you have something else in the detailed - or, in the flight plan?
CC-H No. I'm sorry, Vance. I understand what you said. When I said go to the flight plan supplement rev 89, that was supposed to be the last part of the procedure that I was reading, and not a direction for you to do now.
CMP Okay. Okay, well let me copy all that down again, then. I would - I had to run off and do something else, just as you came in.
CMP Houston, Apollo.
CC-H Go ahead, Vance.
CMP Okay. Once again - the very last thing, where you refer me to someplace in the supplementary flight plan. Would you give me that, word for word, at the time it's supposed to be?
CC-H That was at 146:40, after you have inhibited all the jets except - then just proceed and go to the flight plan supplement rev 89.
CMP Thank you.
CC-H And - just to make sure we've got this straight - let me just start on the - start from the top, on this ATM maneuver.
CMP Okay, I - I think we've - I've got it. Let me read it all back to you. That'd be better.
CC-H Fine.
CMP Okay. Starting about 146:02. We're going to turn BMAGs on, we're going to maneuver - these are just the changes - we're going to turn BMAG 1 on, maneuver to the burn attitude for ATM - that's a pad - , after that, we'll go down to antenna, which is minus 22 and 305. Then at 146:36 we'll have the ATM burn. Immediately after that we'll do the maneuver that was up at 146:04, about - which (garble) VERB 49 maneuver to target 365 A. Then after that, VERB 48 put in a slow maneuver rate DAP, 6-1-1-0-1. Inhibit all jets except -

END OF TAPE

CMP - 146:04 about, which VERB 49, maneuver to target 365 A. And - after that, VERB 48, put in the slow maneuver rate DAP, 61101, inhibit all jets, ACCEPT, then go to supplement flight plan, REV 40 or REV 89.

CC-H Roger. The only thing that I didn't hear this time was the DAP change and that's immediately after turning those B MAGS on, 60102, 01111.

CMP Right We have that too, and I forgot to give it to you. Okay, we got it.

CC-H Okay. At 149:02.

CMP (Garble.)

CMP Go ahead at 149:02.

CC-H Roger. There's maneuver to a VIS OPS attitude. We would like to change R to the NOUN 78 from plus 09000 to plus 06000, and that's so that you can have the better attitude to look out the window.

CMP Roger. Copy.

CC-H And we'd like you to put a little box around that activate primary evaporator because that's the only one we want you to do this morning.

CMP Okay. To 149 we'll emphasis by a box that we do do that activation.

CC-H And, because you changed your attitude at 149:31, change the high gain antenna angle to minus 12 and 336.

CMP Minus 12 and 336. 149:31.

CC-H Roger.

CC-H And on that pass at 150 hours and 17 minutes we'll probably lose ATS.

CMP Okay.

CC-H And, that's all I have for the flight plan. The next one is in the experiments checklist. And, we're going to lose you for a couple of seconds while we make a mode change.

CMP Roger.

CC-H And, Vance, if you're digging for books, I'm going to be giving you the ATM in updates book.

CMP Stand by one, Bo. We're scrambling around here.

CC-H Roger.

DMP Bo, while we're scrambling for books, I can give you morning report here if you want it.

CC-H Roger. Ready to copy the morning report.

DMP Houston, how do you read?

CC-H Read you loud and clear, Deke. Go ahead with your morning report.

DMP Okay. Yesterday was day 6. Let's see the AC had everything for breakfast with tea added - sugar and lemon. Okay. For lunch, he didn't use the chicken salad, and he added cheese, tea, strawberry, pecan cookie. Evening, no cherry nut cake, added bread and cheese, and tea. Got all that?

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CC-H All breakfast. Lunch chicken salad, cheese, tea strawberries and pecan cookies. And, dinner, no cherry nut cake, added cheese and tea.
DMP Roger. Okay, PRD, you ready for that? Tell me when you're ready, Bo.
CC-H We're listening, but I did not hear the PRD.
DMP Okay. I was waiting for you to switch pages. Okay. It's 11009, 7 hours, good; no medications; and a full tank of water.
CC-H Roger. 11009, 7 hours, no medication and a full tank of water.
DMP Rog. Okay. CP menu.
CC-H Go ahead.
CMP Everything - everything for breakfast. Scratch the ham for lunch, added tea and cookie, add a cheese for dinner.
CC-H For dinner that was an add or subtraction of the cheese?
DMP That was an add.
CC-H Okay.
DMP And his medical report. You ready?
CC-H Ready?
DMP 48216, 7 good and 70 seconds. He must have a lousy PRD or else I'm absorbing the radiation at a much higher rate than the rest of us.
CC-H Understand, 4216, 7 good and 70 seconds.
DMP Rog.
DMP Okay. Then the DP. Everything for breakfast, scratch the salmon for lunch, eat that as a snack, okay leave it on, and in the evening, scratch the macaroni and cheese, and chocolate nut cake.
CC-H Got it.
DMP Okay. The medical report. Okay PRD is 61008, 7 hours excellent sleep, and about 40 swallows of water.
CC-H Roger. Sounds as if everybody slept good last night.
DMP Yeah. Sure did. Super.
CC-H Great.
DMP That old DM's cooling down pretty good now, Bo, so we're getting some cool flow up there. I usually sleep there and Vance in the tunnel and Tom down here with the hoses blowing, so it works out pretty well.
CC-H Did - did I actually wake you up this morning?
DMP You actually did.
CC-H Great.
ACDR Yeah, I had to scramble to answer you before you went over the hill.
CC-H Good sign.

END OF TAPE

ASTP (USA) MC493/1
Time: 08:06 CDT, 143:45 GET
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ACDR Say Bo, you have some changes in the experiments there.
CC-H Roger. On the experiments checklist - it's page 1-8, and it's modification to the EPE procedures for sample number 1.
ACDR (Garble)
CC-H Apollo, Houston. I did not hear you. Did you say you had it ready?
ACDR You think you can stand by? That's in a separate book - we got to get it.
CC-H Sorry.
ACDR Did you have anything for the (garble) experiments book while we're looking for that? We got the main one out.
CC-H No.
ACDR All right, Bo. I can go ahead.
CC-H No, I don't have. I've got something to the Earth OBS book.
CMP Okay, fine. Go ahead and give Tom the updates book then.
ACDR I'm ready to copy that maneuver, Bo.
CC-H I - I'm sorry we don't have the maneuver ready for you yet.
ACDR Oh. Okay. Bo, do you have any stuff for the update book?
CC-H We will have the maneuver for you very shortly and it - then it will go in the update book. But we don't have it right now.
CMP All righty.
ACDR Okay, Bo. I got the Earth OBS book here.
CC-H Okay. This is for rev 88, site 8D.
ACDR Okay. Target 8D and rev 88.
CC-H Roger. Dam site 2 nearest the center of the window at 144:44:48. And, that's approximately 15 degrees south of Nadir.
ACDR Hang on. I need a different pencil to write on this book.
CC-H Yeah, I see. I didn't try to write it on mine either. I see what you mean.
ACDR That was 144:44:48? Over.
CC-H That's affirmative. And on site 8E -
ACDR Got it.
CC-H Okay. Structure number 1 time 144:46:36 and that will be 20 degrees south of Nadir.
ACDR Got it. 144:46:36 20 degrees south Nadir. Okay.
CC-H And structure number 2 time is 144:49:15 and that also is 20 degrees south of Nadir.
ACDR Okay. I got that. 144:49:15 and also 20 degrees south of Nadir.
CC-H Roger.
ACDR Hey, Bo. Tell Farouk right now wherever our position is. We're passing over some tremendous sand dunes. They've got long rich dunes and on top of them are little bitty - or big stars -

I mean they are big babies. It's like in - nearly a sedimentaery basin I don't know where we're at. I just wanted to report that at this time. It's 143:50:30.

CC-H Roger. And it looks like you're over - like North China.

ACDR Okay.

CC-H Just off the big board.

CC-H And des OBS(?) copied all that.

CC-H And Apollo, Houston. Just a little weather report. It's a little cloudy at the start, rather clear over South America. It should cloud up across inner ITC(?) and then it should clear up again until you get up into Europe, just south of the Alps.

ACDR Okay. Okay. I got the ET - EET experiments checklist.

CC-H Okay. Modification to ET procedures for sample one. Experiment checklist page 18 and that's step 5.

ACDR Okay. Got it.

CC-H Okay. When the AC observes sample one at 60 minutes, perform the following. If the front band has advanced to the 110 milimeter mark, then proceed to the ETE freeze procedures immediately. If the front band has not advanced to the 110 mark, then proceed nominally, which is to reset the portable timer to 15 minutes. And then after 15 minutes, do the ETE freeze procedures.

ACDR Oops. You'd better give me all of that again. I don't write that fast.

CC-H Okay. At 60 minutes, perform the following: If - fhe front -

ACDR Wait a second. What sample?

CC-H That's on sample number 1.

ACDR Sample number 1. Okay.

CC-H If the front - if the front band has advanced to the 110 milimeter mark -

ACDR Okay.

CC-H - then proceed to ETE freeze procedures immediately.

ACDR Okay.

CC-H If the front band has not advanced to the 110 milimeter mark, then proceed nominally.

ACDR Okay.

CC-H Which means that you reset the timer for 15 minutes and then do a brief.

CC-H And what it means is that we're leaving the STDN out of this call. You don't have to call down to us - you just look at it and if at 60 minutes you're 110, you go ahead and freeze it; if not, you wait another 15 minutes and then freeze it.

ACDR Okay.

CC-H One other item is that we do need to know where the band is.

ACDR Okay.

CC-H And I have 1 circuit breaker call. That's all the - that's all I have for the experiments checklist.

ACDR Okay.

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CC-H I have a circuit breaker call and it is to take the 100 watt - 100 watt heaters off and put the 5 watt heaters on and that is on panel 226, circuit breaker 02, Tank 100 watt heaters, 1 main A open, 02 Tank 100 - -

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Time: 08:16 CDT, 143:55 GET
Date: 7/21/75

CC-H - - heaters 1 MAIN A OPEN, 02 tank 100 watt heaters, 2 MAIN B OPEN.
ACDR Okay. Bo give me that again. It's 02 tank 100 watt heaters, MAIN A, MAIN B OPEN. Right?
CC-H Roger. 1 MAIN A OPEN, and 2 MAIN B OPEN.
ACDR Got them.
CC-H And then 02 tank 50 watt heaters, 1 MAIN B CLOSED and 2 MAIN A CLOSED.
ACDR Okay, got those.
CC-H Thank you.
CC-H And I've got one note and it'll probably cause a few changes later but right now it's just a note. And that's camera number 4002, the colorwheel is stuck, black and white are okay, currently in the DM on panel 871. And number 4009 won't hold the color synch; the black and white is okay. That's currently in the DM and we think you've put it on number 873.
ACDR Did that switch around per your request yesterday.
CC-H Roger. The thing is that looks like we've got another camera that's not giving us good color.
ACDR Okay.
ACDR Give me those serial numbers, Bo, again so we can double check those.
CC-H Number 4002 and numbers - number 4009.
ACDR Okay. 4002 should be on 871 and 009 on 873.
ACDR The 873 is the better of the two I gather.
CC-H And, we'll have a mission note for later on what to do exactly with those cameras.
ACDR Okay.
CC-H And that's all we have. I'm sorry for disturbing your breakfast though and there are just 2 minutes until LOS but we'll pick you up shortly at Guam.
ACDR Okay.
PAO Loss of signal from Application Technology Satellite. Reacquisition through Guam, about 30 seconds from now. We'll just stand by for that.
CC-H Apollo, Houston through Guam for a little over 6 minutes. Standing by.
ACDR Okay.

END OF TAPE

ASTP (USA) MC495/1
Time: 08:16 CDT, 143:55 GET
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CC-H Apollo, Houston. There is less than a minute until Guam LOS. We'll see you at Vanguard at 144:19. That's a little different than what is shows in your flight plan, because the ship is steaming.

CMP Okay. Hey, and - Bo. I was off the line when you were telling Tom about the splashdown of Soyuz today. It'd sure be interesting to hear what it was like and how everybody looked when they jumped out. May be the next - (garble).

CC-H They had a helicop - they had a bunch of helicopters following them, with TV cameras. And we saw them on their 1 great big chute, coming down, you know - it looks kind of like a diving bell. And just before they hit the ground, there was a big cloud of dust. Must have been where the rocket fired. And then the dust blew away, and they settled down quite - looks like quite nicely. When the people got to them, they got out and stood up, and both of them waved. And so they looked like they were in good health and good spirits.

CMP Sounds great.

CC-H And we're just about going LOS here.

PAO Loss of signal through Guam. Earlier this morning we mentioned a plaque, which was being ceremoniously transferred from flight director Pete Frank to the Soviet support room specialists, here in Mission Control. The intent was to provide 1 plaque for each of the 10 visiting specialists who worked with the flight control teams here in Houston. And it was presented as a compliment, to each of the 10 visiting specialists, to commemorate their significant accomplishments here, working with the Houston flight control team members. The plaques were approximately 20 by 24 inches. And in the upper lefthand corner was a small American flag, in the upper righthand corner, a small Soviet flag and, in between the 2, a circular sigma Mission Control emblem. And in Russian, the writing read, "This is to certify that" - and then the name of the specialist - "as an honorary member of the National Aeronautics and Space Administration Flight Control Team, has taken an active part in the implementation of the Apollo-Soyuz Test Project in July 1975." And it was signed by the 4 flight directors for ASTP for the Mission Control Center in Houston: Pete Frank, Frank Littleton, Don Puddy, and Neil Hutchinson. Also, we have the program director's mission report - mission report number 6. The orbit of the Apollo given by this report is 122.5 nautical miles apogee, 119.0 nautical miles perigee, and orbital weight of 30,400 pounds. Science experiments on Apollo - the extreme ultraviolet telescope took prime data on revolutions 72, 73, and 80. Supplemental data was taken on revolutions 74, 75, 76, 77, and 79. The instrument was within .5 degrees, and that parameter was within the PI specifications. The helium glow detector was fully operational and took data on revolutions 74, -5, -6, and -7. The soft x-ray detector - The detector for the soft x-ray experiment was purged in revolution 72, prior to a supplemental scan. The rev 72 data looked good, but supplemental data in rev 73 was degraded. Principal investigator for that experiment requested that a purge be performed before

each data take and asked that the low voltage be left on while the door is closed, to warm the detector itself. As a result of these problems, the x-ray supplemental passes in rev 74 and 75 were scrubbed. Also, data was taken from 2 additional revolutions for the geodynamics experiment. And the multi-purpose furnace sample, MA131, was processed and removed. And a new sample, MA085 - excuse me. MA085 crystal growth were inserted in the furnace. Earth observations were conducted as scheduled. And there are several Earth observations passes scheduled for today. Those include passes over Europe and over the United States' eastern seaboard, looking for red tides and currents. Our next acquisition will be through the tracking station at Santiago, Chile, at ground elapsed time 144:12. This is Apollo Control.

END OF TAPE